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ABSTRACT

Knowledge of and use of the information provided by learning style theories can be of help in providing better educational experiences for students. Learning style preferences are of particular significance in programs such as allied health/health occupations education that practice selective admissions. Since the students have all been judged academically to be capable of success in the programs, knowledge of learning styles would help to account for the fact that some of them do not succeed and leave the program. Learning style preferences could be used to tailor programs to these students so that they can succeed. Research on cognitive styles that can be used to improve health occupations education includes the following six theories: (1) Witkin's Model of Field Dependence versus Field Independence, (2) Meyers-Briggs Type Indicator, (3) Cognitive Style Mapping, (4) Learning Style Inventory, (5) Learning Preference Inventory, and (6) Productivity Environmental Preference Survey. Knowledge of and use of these and other research instruments in the field can make a difference in the success of students in health occupations education, even if the educational institution does not have the financial and time resources to assess the learning style preferences of all or even of selected students. (KC)

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TEACHING/LEARNING STYLES AND PREFERENCES: RELEVANCE AND RELATEDNESS TO HEALTH OCCUPATIONS EDUCATION

By

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LEARNING STYLE AND LEARNING PREFERENCES OF PERSONS IN HOE

Introduction

Payton and others(1980) in a published article titled,"Instructional Style Preferences" summarize findings with the following commentary,"This study demonstrated an unexpectedly high level of agreement between students and faculty members (Physical Therapy) in preferred modes of teaching and learning."(1281) Earlier in the discussion of their nationwide study, these authors declare"the general shape of the graphs(Mean Raw Score Profile) and Table(Rank Order Preferences in Learning/teaching Style) are similar."(1280) Further this suggests that: "through the admissions process, Physical Therapy faculty members tend to duplicate themselves by recruiting and selecting students with general attitudes and preferences similar to their own."(1280)

The greater significance of the above sited study for our purposes is that the study included procedures to identify differences among students specifically their preferences in "learning styles".

Learning style/preferences investigations are of particular significance in programs such as Allied Health/Health Occupations education programs that practice selective

admissions.

Admission criteria have concentrated on academic variables such as GPA, class rank and prior achievement virtually assuring the innate necessary mental ability necessary for achieving required knowledges. Although some students leave occupational education programs because they discover they simply don't want to become a "---";numerous other students depart these preparation programs convinced that they "can't" grasp the requisite knowledge base in the preprofessional phase or acquire the basic skills of performance. No doubt, these departing students displayed the same capabilities as other students in a selective admission program; students who are now successfull and progressing in an orderly expected manner. Beyond the influence of motivation, the circumstances warrant identification of other variables, including a possible descrepancy between faculty and students preferred teaching/learning modes (styles). Identification of such descrepancy by procedures rather than intuitive "hunches"are now possible and worthy of consideration.

Although not "new" in education, measurement of teaching/learning types and preferences has reached a new level of sophisication. To assure some commonality in the basis for consideration , definitions (descriptions) are presented first, followed by a compendium of

measuring/assessment procedures.

Strother(1982) choose the following statement to introduce a section of a recent publication.

> "Each person is unique. Even identical twins have distinguishing characteristics. We come from different genetic, ethnic, and social backgrounds and the combination of these and other factors makes each of us individual. We need a precise method of describing the way that each individual searches for meaning."(106)

Even (1982)in an article emphasizing adult learners supplies the following;

> "Cognitive styles are the ways in which an individual perceives, gathers, and processes information in order to learn, solve problems, work, relate to others, choose a career, raise children, act in groups, or participate in activities"(14)

Rezler and Rezmovic (1981)supply the following definitions

> "Learning style is the manner in which an individual perceives and processes information in learning situations. Learning preference is defined as the choice of one learning situation or condition over another."(28)

Dunn/Price are credited with the following definition of learning style

> "the manner in which at least 18 different elements from basic stimuli affect a person's ability to absorb and retain information."Rephrased by Davidman(1981)"Learning style is the aggregate of the student's own opinions about

> the way he or she learns" Davidson continues"Hunt, on the other hand, says,'Learning style describes a student in terms of those educational conditions under which he is most likely to learn".(642)

Keefe offers the following definition of Learning styles

> "(they) are cognitive, affective, and physiological traits that serve as relatively stable indicators of how learners perceive, interact with, and respond to the learning environment"(44)He includes Messick's definition of"Cognitive styles are information processing habits representing the learner's typical mode of perceiving, thinking, problem solving and remembering"(45)

Although, at first glance the definitions may seem too "global"and, too inclusive, the implication is intended to remind the reader of the vastness of this very individual personal quality which influences the processes of the entire occupational education program. This is of even more importance when the student is an adult.

Research and Learning Style/Preferences

Obviously not all dimensions of Cognitive Style and their influences have been the center of empirical study; however, certain theories have been researched and applications reported, of these only selected ones are included:

Witkin's model of Field Dependence vs Field Independence

Meyers Briggs Type Indicator

Cognitive Style Mapping;

Learning Style Inventory;

Learning Preference Inventory:

Productivity Environmental Preference Survey

While the entire scope of research in the realm of cognitive, affective as well as physiological preferences is pertinent to Health Occupations Education, discussion will be limited to the six above mentioned theories and the related instruments. In addition, studies involving HOE programs and students will be reported.

WITKIN'S MODEL OF FIELD DEPENDENCE vs FIELD INDEPENDENCE

Keefe(1982) states

> "Field independence vs dependence measures a continuum of an analytic as opposed to a global way of experiencing the environment. Independents perceive things clearly from the background field, but dependents are influenced by the overall organization of the background and see parts of the field as "fused". Independents differentiate among experiences while dependents see them as integrated. The field independent learner will tend to be highly analytic and systematic; the field dependent learner, holistic."(45-6)

Even(1982) describing the impact on adult learners credits Cross

> "Due to styles learners see and make sense of the world in different ways.they approach their environment differently, they construct relationships differently, they process information differently" Even continues" 'new' students may be more field-dependent because of their need for approval and their sensitivity to other's opinions. They may be more extrinsically oriented and therefore more intensely responsive to social reinforcement.(14-5)

Of particular interest to Health Occupations Educators are implications regarding occupational choice.

> Field dependents tend to favor traditional sex roles and are poor at analytical problem-solving. Field dependents view things holistically, make favorable first impressions, are gregarious, affectionate, considerate, and tactful. They most generally enter the helping vocations. In contrast, Field independents are analytical, have a highly developed group.(15)

Also of importance to Health Occupations Education is the personal capability of reating to others.Even continues:

> " Field-dependent persons are more responsive to cues from au.hority figures or from a group, and they are selectively attentive to the human content of the environment. They, more often than do field independents, look at people's faces, the major source of information about other's feelings.
> Of significance is the research conducted on students' learning. Field dependent people are able to learn social information more readily and have therefore more highly developed social skills than field independents. Field independents, on the other hand, make use more often of mediators in learning, as illustrated in studies of organizational factors. Without structure, field dependent persons are likely to have greater difficulty learning material as compared to field independents who usually provide themselves with a mediating structure to facilitiate learning. When material is presented in organized form, neither dependent nor independent learners differ in their learning."(15-6)

Although specific studies conducted in Health Occupations Education are not included; direction can be realized by

interpretation of the above statements. The significant reference to adults is important as is the reference to choice of "helping vocations".

THE MEYERS-BRIGGS TYPE INDICATOR

A catalogue description may describe the MBTI as a measure of personality dispositions and interest based on Jung's theory of types. Suitable for upper elementary through adult ages, it provides four bipolar scales which can be reported as continuous scores or reduced to a 4 letter code or "type". Scales are:

Introversion (I)---Extraversion (E)

Sensing (S)---Intuition (N)

Thinking (T)---Feeling (F)

Judging (J)---Perceptive(P)

When reduced to a 4 letter code it is simply referred to as ISFP or ENFJ etc.

A rapidly growing body of research suggests that the results of MBTI can be useful in career counseling, executive development programs, marriage and family counseling, educational planning and personality research.

During an interview conducted with Huck(1983) it was learned that following their introduction to the MBTI, the faculty of a near by clinical education site for Medical Technology students began considering the possibility of this measurement instrument as a means to identify more of the personal preferences of both faculty and students. Reporting on a small faculty as well as small student body , they were able to identify some preferences that were in agreement and some that were not. In this particular study, the faculty sample was 16 which could have resulted in a distribution of one to each of the possible 16 types. However,the report shows the absence of any types ISTP, ESTP,ENTP,ESFJ and ENFJ.Sameness of students "types" is noted with the report of no ISTP or ESTP (N=22).The greatest disparity is noted with 3 students in the ESFJ type;the absence of any student INFJ or INTP is interpreted as difference since in all other categories students are reported.

The findings listed above gain additional significance when compared with the findings of a more extensive inquiry completed in the early 1970's. McCauley reported

> "Among 363 students, faculty and practitioners in Medical Technology, based on data collected in the 1971-73 interim that group included only 8 ISTP and only 8 ESTP. The most frequently reported "types" in that study were ISTJ with 39, ISFJ with 43 and ESFJ listed as the Type of 42."( )

In a study of students in associate degree Radiography program

Ragle and Ross report:

> The purpose of the study was an attempt to ascertain if personality variables, as determined by the Meyers-Briggs Type Indicator, could be possible predictors of successful completion of a two-year Associate Degree Radiography Program. This study was unable to identify any significant factors in program retention or attrition that can be attributed to personality characteristics.(290)

Although the similarities have been highlighted, the greatest factor for consideration is those instances where dissimilarities are noted. They can provide meaningful direction for the change of teaching mode to accommodate identified student "type".

COGNITIVE MAPPING

Based upon research completed by Joseph E. Hill, a picture or "map" of the style utilized by the individual in seeking meaning from his/her environment is devised. Hill is credited with development of the Educational Sciences , the purpose of which was to create a conceptual framework and language for the study of the educational process.Rosenbloom(1980) describes the framework as consisting of seven sciences described in a cartesian product of sets. These include:

1-symbols and their meaning

2-cultural determinants

3-modalities of inference

4-electrophysiological, biochemical aspects of memory

5-cognitive style

6-teaching, administrative and counseling style

7-systemic analysis decision making.

"Cognitive Style" is made up of elements from the first four sciences.

Rosenbloom (1980)states

> "Cognitive style" can be used as a means for diagnosing the way an individual comes to know. In addition it provides direction for prescribing specific activities that would provide the individual with a high probability for success in a specified learning situation. According to Hill it is necessary that a cognitive style analysis be made not only of the student but also of the learning task. Both are required if the construct of cognitive style is to be used as an effective tool for improving upon the conventional methods of analyzing evaluating the learning process.(35)

Cultural and family background, talent, training and life experiences make each of us unique. Each cognitive style map, like each of us is different, the map provides a picture of the way in which we acquire meaning. It identifies strengths and weaknesses as the basis upon which to individualize instruction.

Specific studies involving Allied Health Occupations/Nursing students

Lange(as reported by Rosenbloom 1980) studied the results of matching cognitive style of students and instructors in nursing education and concluded that the failure-withdrawal rate of the matched groups was significantly different from the non-matched and that the more elements present on a student's cognitive map the greater is his/her chance of success in nursing education.(37)

Boyer(as reported by Rosenbloom 1980) derived cognitive style maps for ten occupational areas including Clinical Lab Assistant, Medical Assistant and Licensed Practical Nurse in the HOE cluster.

Ogden (1980) reports the results of studies based on a population of 527 nursing students at Corning Community College. After "success" in using the "map" to determine problems for a select few students who were having academic difficulty, there was a decision to "map" all nursing students (thus the large sample). Using age classifications i.e., I-18-21,II-22-30,III-31-36,IV-37-50 and V-over 50, differences and similarities between and within groups were identified. Faculty were also "mapped" as well as oriented to the usefulness of the information presented by the "map". The rewards of the involvement are basically improved instructional processes with alternative modes of knowledge

skill acquisition. The following advantages and disadvantages are listed:

Advantages include:identifies student's strengths; helps faculty clarify thoughts and teaching modalities,provides a way to design individual instructional programs for students,helps identify areas that create anxiety in students, and areas of less preference can be developed through augmentation with areas of strength.

Disadvantages include-it is time-consuming and expensive to provide multiple learning routes and there are some kinds of contents which do not lend themselves well to multiple presentation styles;e.g. affective domain.

THE LEARNING PREFERENCE INVENTORY

Rezler and Rezmovic(1981) report on the validation of The Learning Preference Inventory and include a history of the development of the instrument. They report

> "The following considerations entered into the final selection of dimensions to be included in the Learning Preference Inventory(1) the dimensions should be amenable to presentation in a straight-forward manner, with simple, objective test items. Simplicity of dimensions was considered essential so students and faculty could readily understand the results;(2) since the LPI was being constructed for use with students and practitioners in the health professions, priority was given to dimensions likely to influence learning of the types of content and skills essential to the health professions."(29)

As finally developed, the LPI includes six scales;

(1)Abstract; Preference for learning theories and generating hypotheses with focus on general principles and concepts.

(2)concrete;Preference for learning tangible, specific, practical tasks, with focus on skills.

(3)Individual; Preference for learning or working alone, with emphasis on self-reliance and solitary tasks such as reading.

(4)Interpersonal; Preference for learning or working with others, with emphasis on harmonious relations between students and teacher and among students.

(5)Student-structured; Preference for learning via student-organized tasks, with emphasis on autonomy and self-direction.

(6)Teacher-structured; Preference for learning in a

well-organized teacher-directed class, with expectations, assignments, and goals clearly identified.

Description:

The LPI has two parts. Part I includes six sets of six words; the respondent is instructed to rank order all six words in each item. In Part II the respondent is instructed to rank order sentences instead of words."

The LPI is designed for either group- or self- administration where data are to be collected by mail. Subjects are given as much time as needed to respond. Most subjects complete the inventory within 20 minutes. A completed inventory is suitable for either machine or hand scoring. Each item contains six words or sentences to be ranked from one to six and each response in the same item contributes to a different scale. The LPI yields six scale scores for each subject. Each scale score is merely the sum of ranks assigned to each work (Part I) and to each sentence (Part II) included in the scale. Given six items in Part I and nine items in Part II, the minimum score for any scale is 15 and the maximum is 90. These authors continue with a description of the results of computation of both reliability and validity and the processes involved.

Vittetoe and Hooker (1983) report a study of learning style preferences of allied health practitioners in a university teacher education program.

As reported:

> The LPI was administered at the beginning of all courses in theHealth Occupations Teacher Education Program(HOTEP) at the University of Illinois, Urbana-Champaign. A total of 302 students included the following occupational categories: nurse,(RN), medical technologist(MT),registered radiologic technologist(RRT),respiratory therapist (RT), physcial therapist(PT), dental hygienist (DH), and dental assistant(DA). Other health fields with fewer than four individuals wee combined under a category labeled"other health field" and students who had no health field background were categorized as "non health field".There were significant differences in the F values for the concrete and individual scales. All nine occupational categories had higher means on the concrete than on the abstract scales. The means for the teacher-centered scale were higher than the means for student-centered scale in all student groups. Also reported was that the results of this study paralleled the findings of the 1975 Rezler and Frence study regarding medical technologists and physical therapists in that these two groups indicated they preferred concrete and teacher-centered learning styles.(48)
>
> Additional comments authored by Vittetoe and Hooker are included in the closing section.

THE PRODUCTIVITY ENVIRONMENTAL PREFERENCE SURVEY (PEPS)

Dunn R,(1981) declares that PEPS is the first comprehensive approach to an adult's individual productivity and learning style.

> "Learners are affected by their:
> (a) environmental (sound, light, temperature, and the need for either a formal or informal design)
> (b) emotional (motivation, persistence, responsibility, and the need for either structure or options)
> (c) sociological (self,pair, peer,team,

adult, or varied)
(d) physical(perceptual strengths, need for intake, time of day or night energy levels, and need for mobility) preferences.(374)

Description

PEPS:adult version of the LSI (Learning Style Inventory)); contains 100 items, Approximate administration time:30 minutes. The LSI and PEPS are designed to diagnose individual learning characteristics. Accompanying manuals suggest prescriptions to complement selected styles to facilitate academic achievement.

Dunn,K(1982) elaborates

> PEPS analyzes individual adult's personal preferences for each of 18 different elements and was developed through content and factor analysis. It is a comprehensive approach to the identification of how adults prefer to function, learn, concentrate, and perform in their occupational or educational activities in the following areas:
> Immediate environment
> Emotionality
> Sociological needs and
> Physical needs.(136)

Questions concerning each area are presented; selected responses tend to reveal highly personalized characteristics that, when combined, represent the ways in which an individual prefers to work or concentrate.

Data on learning/productivity preferences have implications for recruiting, selecting, evaluating, matching, promoting, planning, designing, special programming, working and time schedules.

Preliminary investigation failed to reveal any studies including HOE personnel.

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LEARNING STYLE INVENTORY

Canfield and Lafferty , as reported by Dunn (1981) an Individual learning style is derived from:

(a) academic conditions
(b) structural conditions
(c) achievement conditions
(d) content
(e) mode of preferred learning;and
(f) expectation of performance level.(374)

The instrument is titled the "Learning Style Inventory" a self-report instrument based on a rank ordering of choices for each of 30 questions. For use with junior high through adult levels. Approximate administration time; 15 minutes. The major use is to develop instructional materials for a whole class or individual students. LSI is viewed as a tool to aid in understanding students' difficulties in completing academic units and for counseling. Emphasis on attitudinal and affective dimensions in the inventory strengthens such application.

Health Occupations Program Experience:

The following is reported by Payton and others(1980): During the academic year of 1977-78, 53 chairmen(Physical Therapy) agreed to participate. As a result 311 instructors completed the Canfield and Canfield Instructional Styles Inventory. The Physical Therapy faculty members were relatively neutral (near the median) on establishing peer relations with students, on comparing students to each other, on discipline, on working with numbers and on providing reading(assignments) to the students. The faculty members had clear preferences for all other items on the inventory. In rank order from highest preference down, the faculty preferred to take major responsibility for student learning, to make logical and organized assignments in sequences, to work with people, and to teach through direct experience; they liked to establish personal relationships with students and to give specific detailed assignments; and they wanted the students to set their own goals and to work independently. They prefer using illustrations, talking, working with inanimate materials, and working with numbers, in that order.

They continue;

> The two largest discrepancies between instructors and students are in the areas of competition and reading. The faculty members, although near the median, were much more interested in comparing one student with another than the students were in being so compared; the student score is very low on this point. In a similar relationship, the instructors were much more willing to make

> reading assignments than the students were willing to read them. Two smaller areas of discrepancy related to independence and authority. The faculty were more interested in the student' working alone or independently; the students indicated that they would rather work with peers. The faculty also scored higher in desiring classroom discipline than did the students.The only score that differs in rank by more than one point between faculty members and students is with regard to peer relationship, the students ranked this significantly higher than did the instructors.(1280)

The population of students used as a basis for comparison in this study was 1099.The students had previously completed a questionnaire of teachers' behavior as perceived and interpreted by their students using an instrument developed by Baird. The subscores reflected six dimensions of teacher behavior. The first three reflected values for; facts,people and ideas. The fourth dimension was relevancy of the student's response to the goals of the teacher.Fifth was the ambiguity as opposed to the clarity of the teacher's expectations, and the sixth dimension was affective rewards given by the instructor.

One advantageous finding could be the implied compatibility of students and faculty in educational philosophy and in the learning process. In spite of the discrepancies noted earlier, students and faculty tend to like and dislike the same kinds of things so that, in general, the

teaching-learning experience is a harmonious and compatible one. A possible disadvantage of this compatibility is that although the profession might profit from having members with different approaches to knowedge, we may not be attracting those "different drummer marchers" to the field, or at least we did not in the two years covered by this study.

DISCUSSION

In an article titled "Cognitive Styles: Boon or Bane?" Schwen et al(1979) rephrase the question.Instead they ask "Are the implications from cognitive style research important for educational research or practice? Do they indicate a direction and promise for future research and application to instruction?"(49) In reponse to their own questions they reply:

> We believe that cognitive style reserach has undeniable potential for use in education practice. There are simply too many studies linking tyles to important intellectual processes and educational outcomes for this area of reseach to be dismissed as fadish. Furthermore, we believe much of the recent criticism of reasearch in this area is misplaced.(49)
> In concluding statements they reaffirm their beliefs"We believe that much of the promise of style constructs has not been realized because of inadequate conceptualization of style research. Difficulties result from incomplete theoretical development of many cignitive style constructs, as well as substantial measurement and related technical problems with all of the constructs. These problems included

non-structured individually administered tests and the lack of norms."(64)

More precise reference to the Health Occupations is included in the following comments Rezler (1981)in a discussion of learning and students, includes the following:

> "To assume that each student is equally inclined to benefit from a learning resource center or an independent study program tends to overlook the role of motivation in learning. Assessment of learning preferences would help to match students with learning conditions that they find rewarding." "Health professions educators could also use the LPI scores to assign the same task under different conditions to different students. For example, the same problem solving task may be addressed by some students individually and by others in small groups. By the same token, some students may be given complete freedom in selecting a task while others may prefer highly structured assignments given by the teacher." "Many teachers take it for granted that listening to lectures inevitably produces learning, an assumption that has been contradicted by learning theory and research."While learning preferences ought to be considered, teachers also shou'd expose their students to new ways of learning. It is difficult to like something that has not been experienced. LPI can show teachers not only what kind of learning students prefer at present but also new avenues to be explored.(33)
>
> "The current interest in learning style focuses on a neglected aspect of individual difference. Knowing about learning-style differences also suggests to the practitioner the most appropriate instructional approach. The differences among the various learning-style models may be less important that the general effect of describing students in ways that can be stated in terms of matches or person/environment combinations" He continues"If you believe as I do that teachers are also psychologists, then the first step is for teachers to identify their intuitive ways of viewing their students and their implicit matching

> models for working with them. When experienced teachers are given the time and opportunity to explicate their intuitive theories, the following characteristics are observed;
> 1)When teachers express their concepts of their students, they use almost every individual difference, learning style, or accessibility characteristic that researchers and psychologists have proposed;
> 2)many teachers are already using almost every matching model proposed by research; and
> 3)many teachers express their implicit matching models in terms more easily understood by other teachers than those of researchers.(647)

Lawrence (1982)states"All conceptions of learning style must pass the ultimate test of practicality;Does this construct help teachers and students attend to the complex factors that affect learning without swamping them with too many variations and complexities?(92)In describing the MBTI, he concludes

> "Finally, all of my experience and research confirm Dewey's adage that effort goes where interest is. The natural patterns of interests associated with the personality types are a rich resource that teachers need to know about. Teachers can't attend to all the idiosyncracies of all the students, but they can understand type concepts and anticipate the patterns of students. Teachers who know and use type theory report that it helps them keep learning styles in mind and see their students as individuals."(105)

> Keefe (1982)declares
> "learning styles diagnosis is unquestionably a primary component of the teaching-learning cycle, one that opens the door to a personalized approach to education. Style diagnosis gives a powerful new tool to educators who want to improve student learning. Viewed apart from a personalized

> philosophy of education, learning style analysis is merely an interesting new assessment technique. In the context of a systematic diagnostic-perscriptive approach, however, it is the base on which an edifice of personalized schooling can be built--a truly modern approach to education." (53)

Perhaps of more significance to teachers in HOE is the premise that learning style preferences are fixed early in life. It is reasonable to assume that instructors must provide alternate teaching-learning modes for their students realizing that both faculty and students have preferences.

Vittetoe and Hooker,(1983) have most appropriately described the situation

> "Education in the allied health fields and nursing is expensive. No program can afford to lose students through attrition. It should be possible for each student admitted to one of the allied health programs or nursing to satisfactorily complete the course of study. If we as instructors ignore the fact that students have different learning styles, we may be contributing to attrition when we fail to vary our methods of instruction. When we fail to match our teaching styles to the learning styles of some of our students, they have to work harder to learn than their classmates who find a match. Worse yet, we can turn students off by our instruction. Implicit in the learning style/teaching style match are the consequences to be faced when an allied health program elects to adopt a single curriculum format, such as programmed instruction. Not all learning styles adapt to programmed instruction. As a result students will neither be attracted to such programs nor remain enrolled. Variety in instructional strategies adds spice to learning just as it does to life.(54)

CONCLUSION

In your educational setting, the "assessment" of all or even

select HOE students to determine learning preferences and/or styles may require long range planning to verify financial and other resources.However, your awareness of differences and response in the form of accommodation can make a difference now.

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